Understanding the Economic Impact of Renewable Energy Initiatives

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Understanding the Economic Impact of Renewable Energy Initiatives:

Assessing Ontario's Experience in a Comparative Context

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with contributions from
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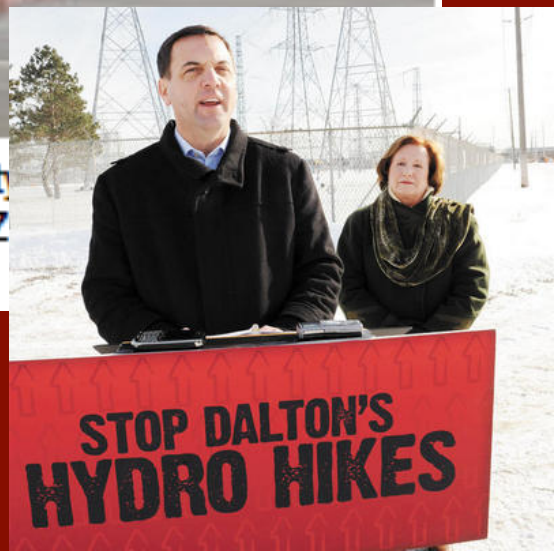
YORK UNIVERSITÉ UNIVERSITY
redefine THE POSSIBLE.

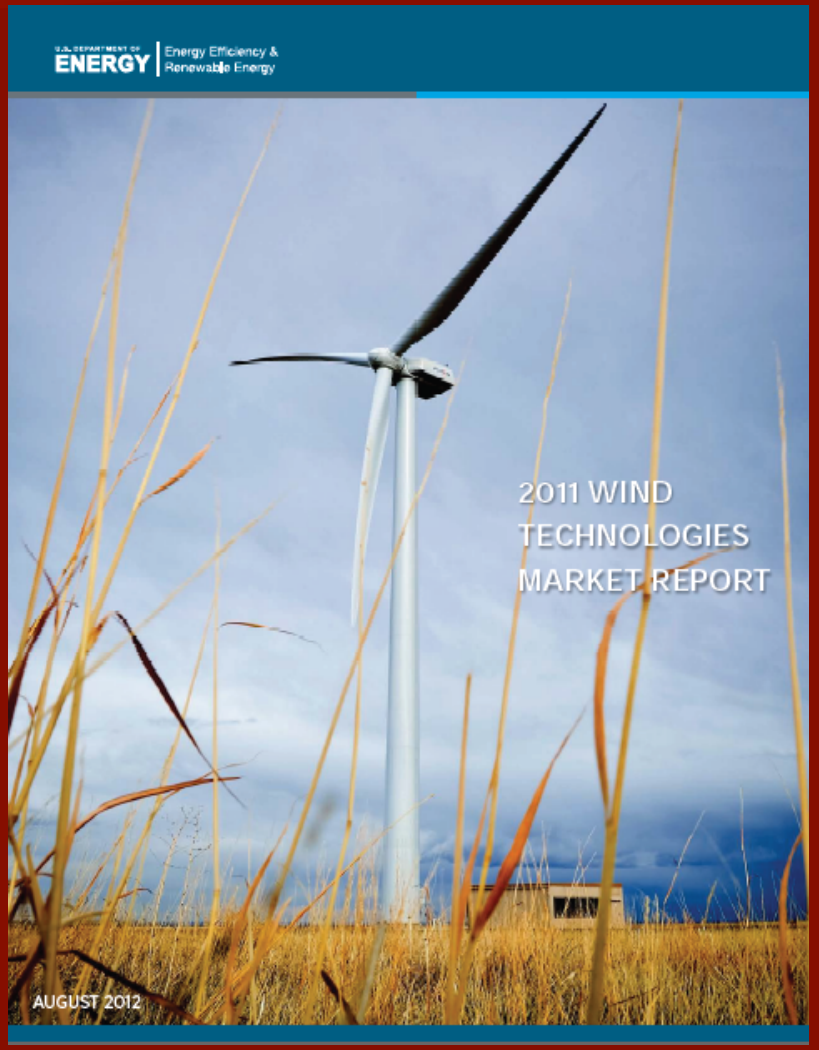
Project Origins

- Debates over economic impact of Green Energy and Green Economy Act
- Government claims re: Job Creation vs critiques



Data on Economic Impact

- StatsCan data too coarse to be useful
- Very limited data held by MEDT
- Arguments based on modeling
  - Very limited empirical studies
- Potential surveys via CanWEA, CanSIA, but beyond scope of initial project



Comparative Analysis

- Discourse in Ontario vs. other jurisdictions
  - Europe (Germany, Denmark, UK, Spain)

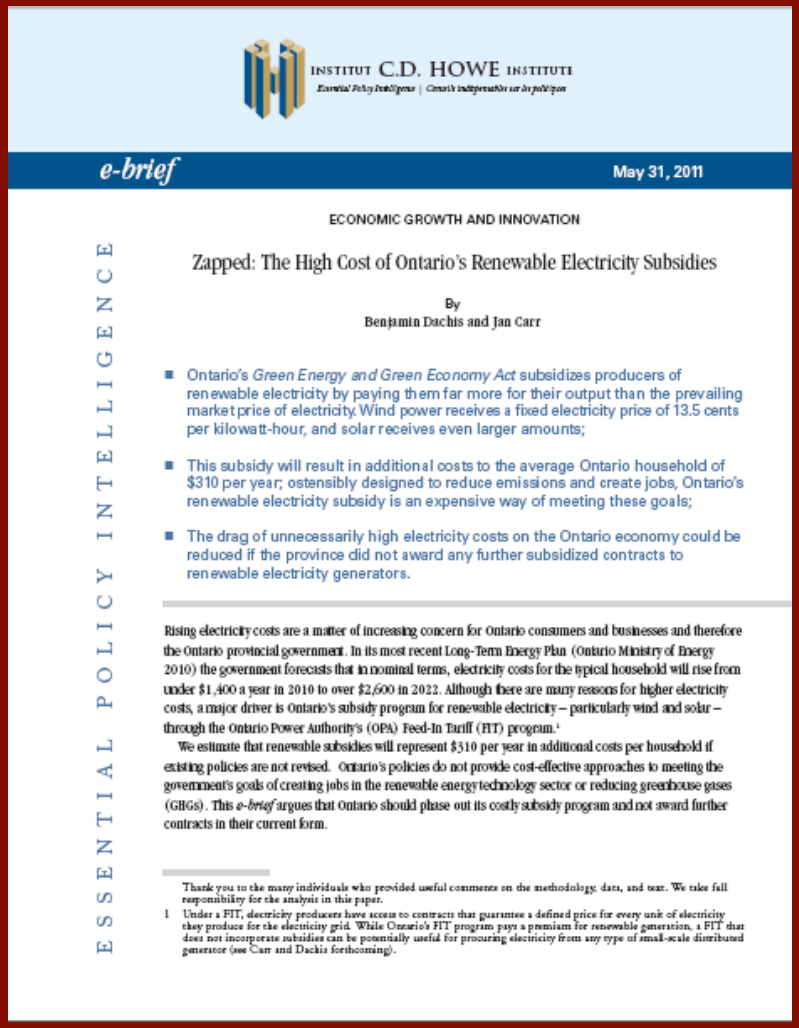
- Two key lines of argument
  - Costs of renewable energy through FITs and similar programs vs. alternative sources of new supply and alternative ways of obtaining new supply
  - Renewable energy development as industrial strategy

The Ideological Dimension

Tolerance for Market Interventions

Green Energy Costs – Market Fundamentalist/Economic Rationalist Critique

- FIT Costs vs:
  - Current market price for electricity
  - Non-renewable supply technologies
  - Supply obtained through competitive bidding processes
- FIT and similar programs mean energy costs higher than they need to be
  - Negative impacts on growth and employment



INSTITUT C.D. HOWE INSTITUTE

e-brief May 31, 2011

ESSENTIAL POLICY INTELLIGENCE

ECONOMIC GROWTH AND INNOVATION

Zapped: The High Cost of Ontario's Renewable Electricity Subsidies

By
Benjamin Dachis and Jan Carr

- Ontario's *Green Energy and Green Economy Act* subsidizes producers of renewable electricity by paying them far more for their output than the prevailing market price of electricity. Wind power receives a fixed electricity price of 13.5 cents per kilowatt-hour, and solar receives even larger amounts;
- This subsidy will result in additional costs to the average Ontario household of $310 per year; ostensibly designed to reduce emissions and create jobs, Ontario's renewable electricity subsidy is an expensive way of meeting these goals;
- The drag of unnecessarily high electricity costs on the Ontario economy could be reduced if the province did not award any further subsidized contracts to renewable electricity generators.

Rising electricity costs are a matter of increasing concern for Ontario consumers and businesses and therefore the Ontario provincial government. In its most recent Long-Term Energy Plan (Ontario Ministry of Energy 2010) the government forecasts that in nominal terms, electricity costs for the typical household will rise from under $1,400 a year in 2010 to over $2,600 in 2022. Although there are many reasons for higher electricity costs, a major driver is Ontario's subsidy program for renewable electricity – particularly wind and solar – through the Ontario Power Authority's (OPA) Feed-In Tariff (FIT) program.[1]

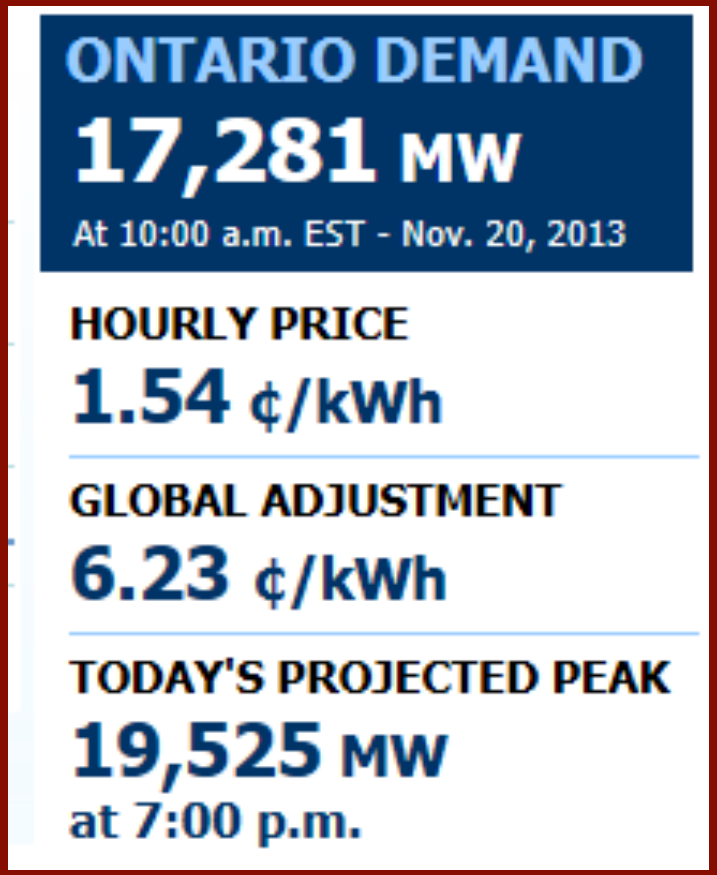
We estimate that renewable subsidies will represent $310 per year in additional costs per household if existing policies are not revised. Ontario's policies do not provide cost-effective approaches to meeting the government's goals of creating jobs in the renewable energy technology sector or reducing greenhouse gases (GHGs). This *e-brief* argues that Ontario should phase out its costly subsidy program and not award further contracts in their current form.

Thank you to the many individuals who provided useful comments on the methodology, data, and text. We take full responsibility for the analysis in this paper.

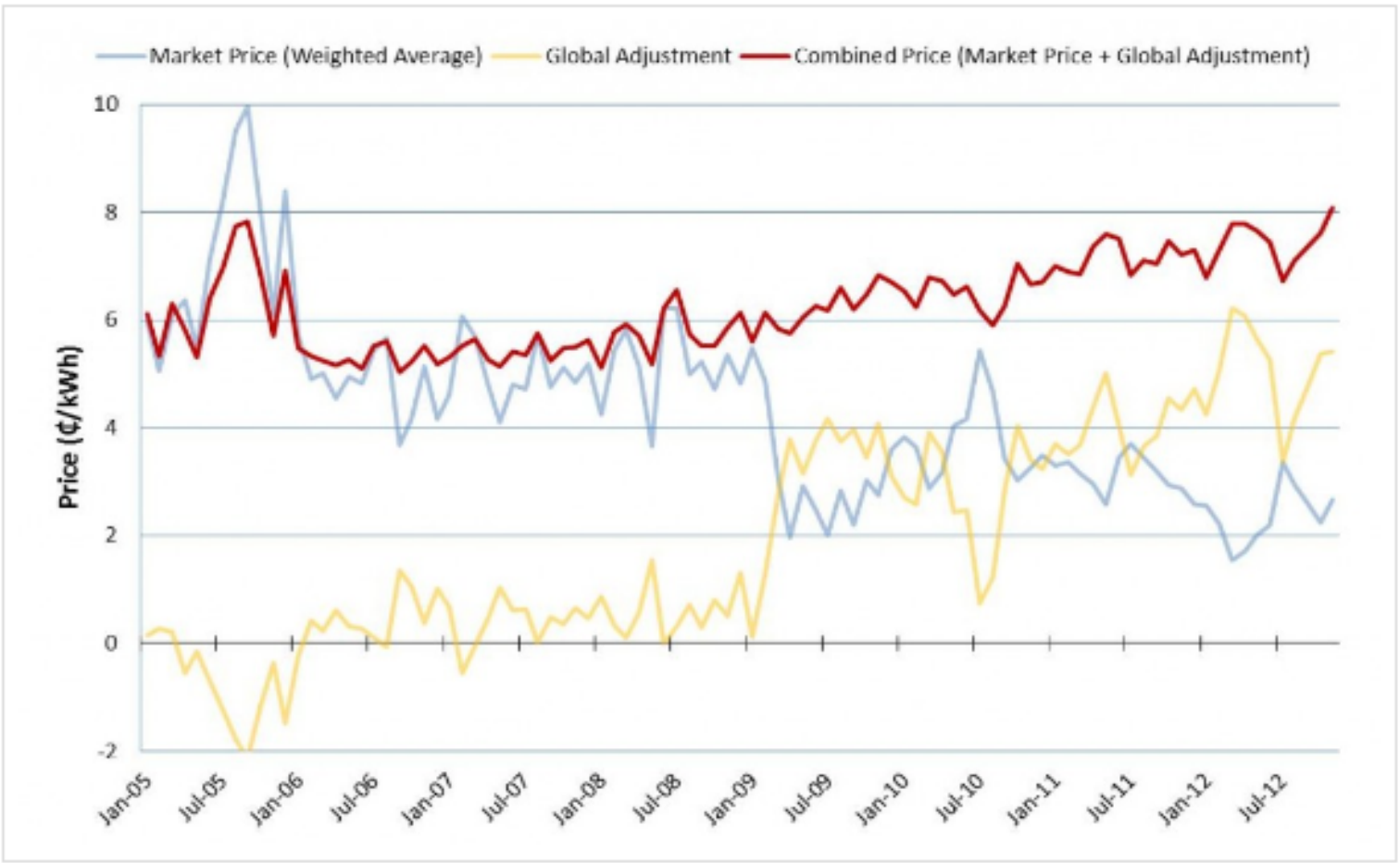
1 Under a FIT, electricity producers have access to contracts that guarantee a defined price for every unit of electricity they produce for the electricity grid. While Ontario's FIT program pays a premium for renewable generation, a FIT that does not incorporate subsidies can be potentially useful for procuring electricity from any type of small-scale distributed generator (see Carr and Dachis forthcoming).

Green Energy Costs – The Ecological Modernist Response

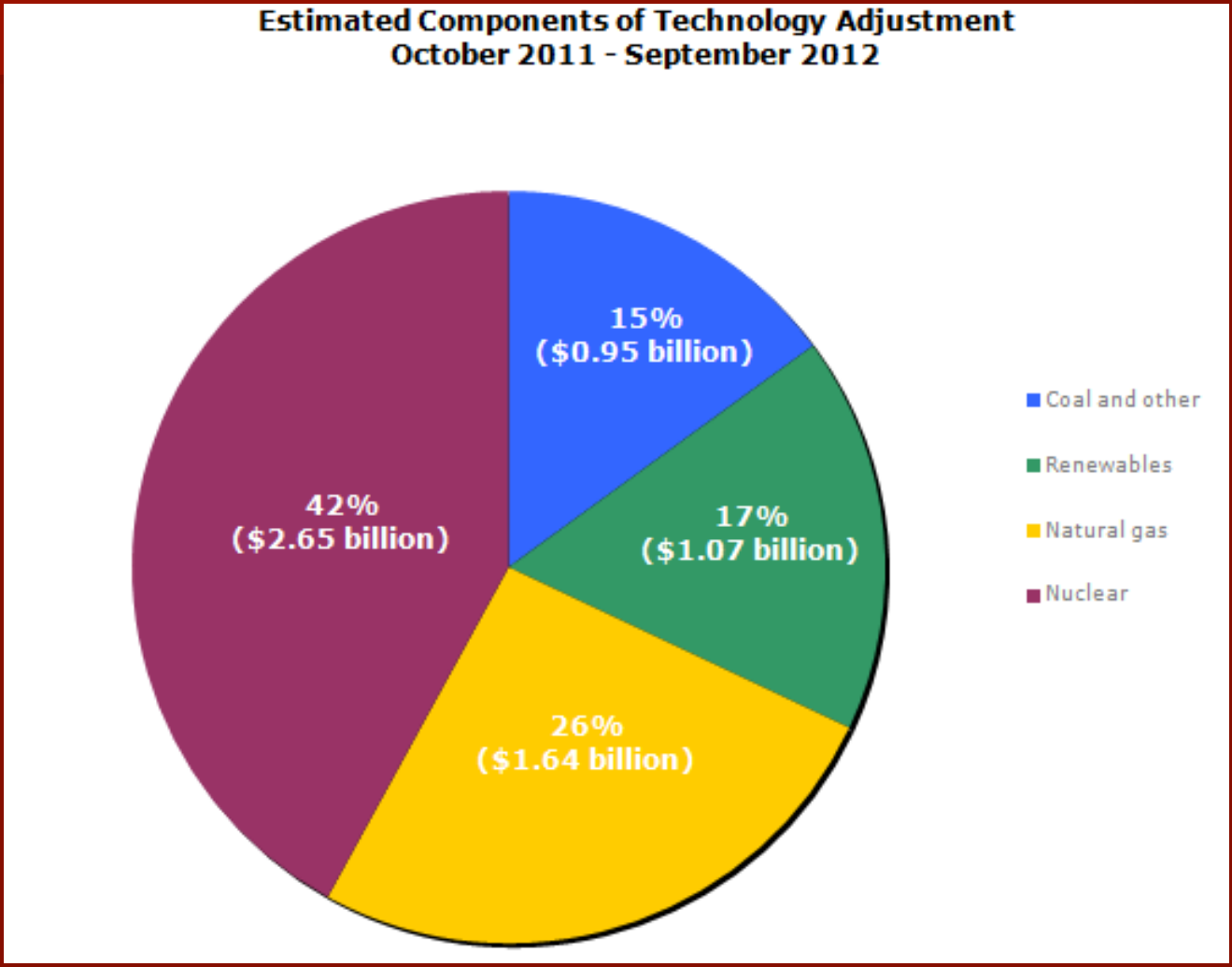
- Technical critiques of methodology
- Ontario market price does not reflect real costs of new supply
- Renewables costs falling and increasingly competitive with conventional technologies



Global Adjustment and Market Price

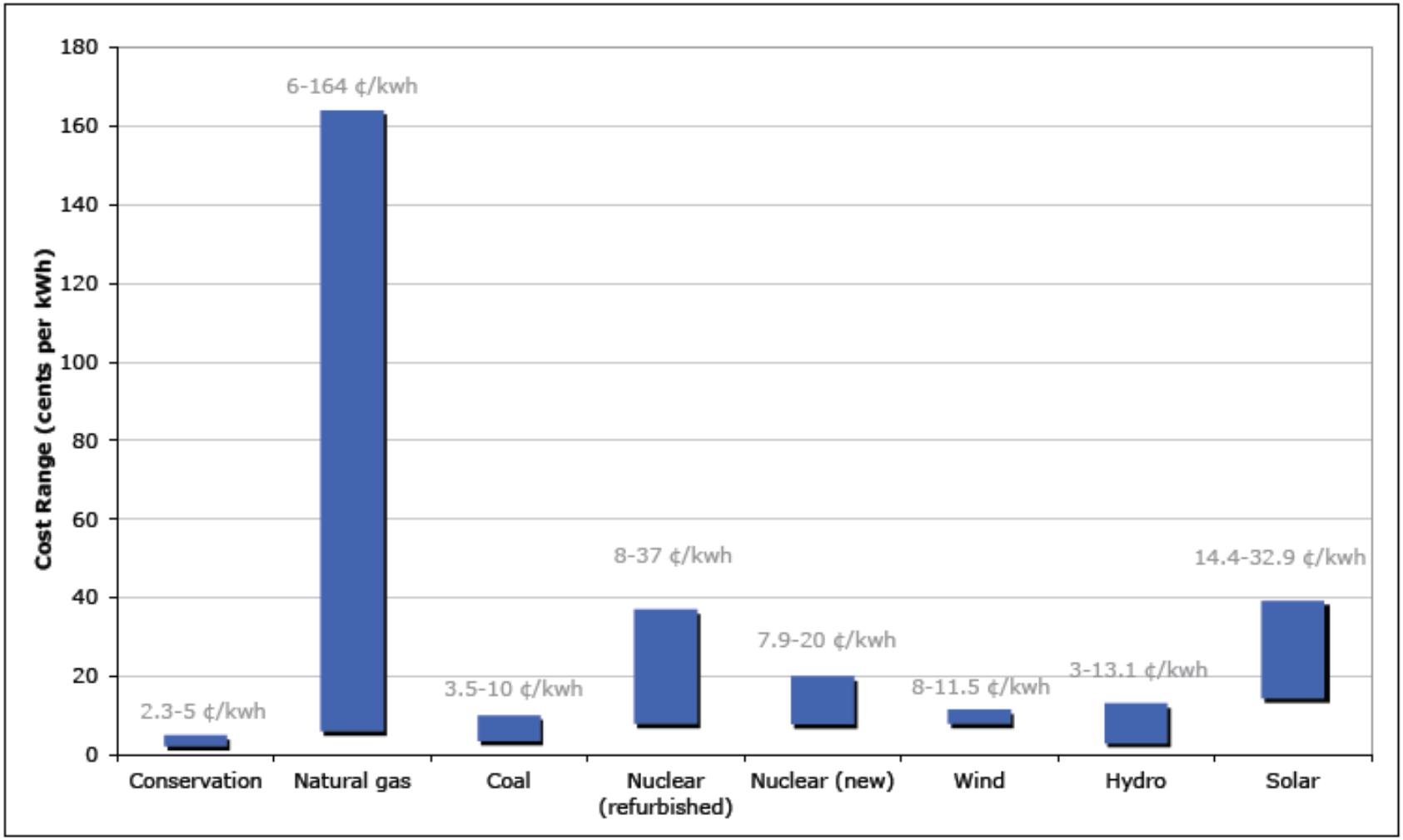


The ‘bum rap’



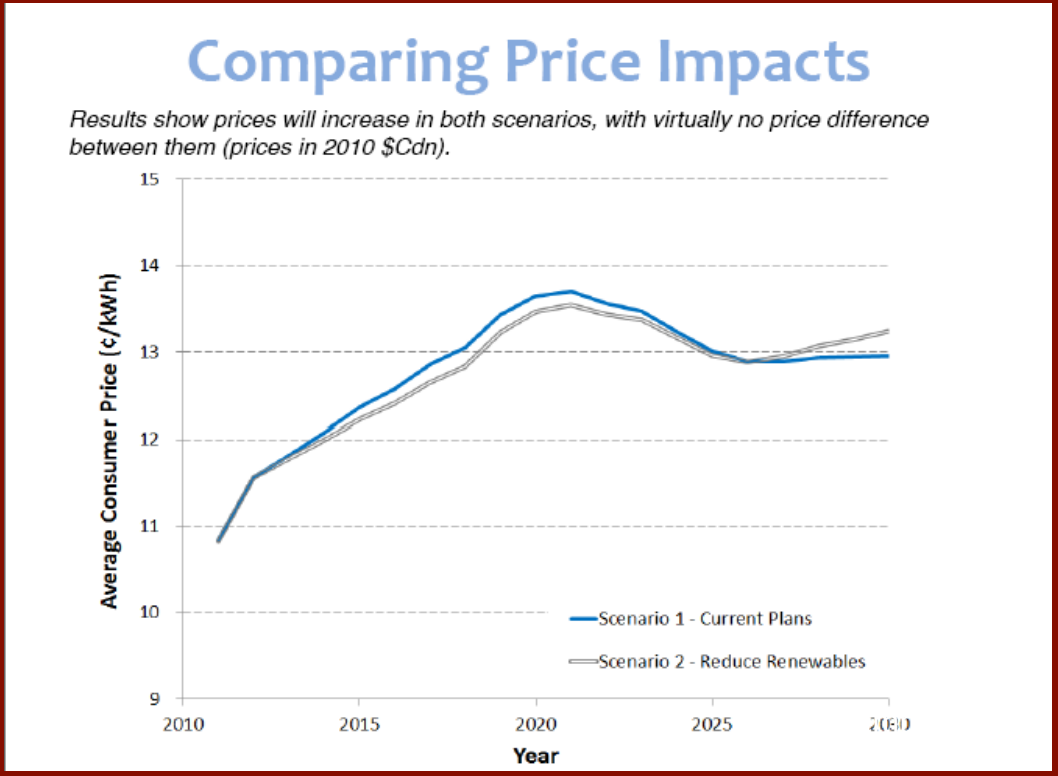
Toronto Star 2013

Figure 4: Economic Costs of New Energy Conservation and Supply Technologies: Ontario[85]



Ecological Modernist Response: Treatment of Avoided Costs and Risks

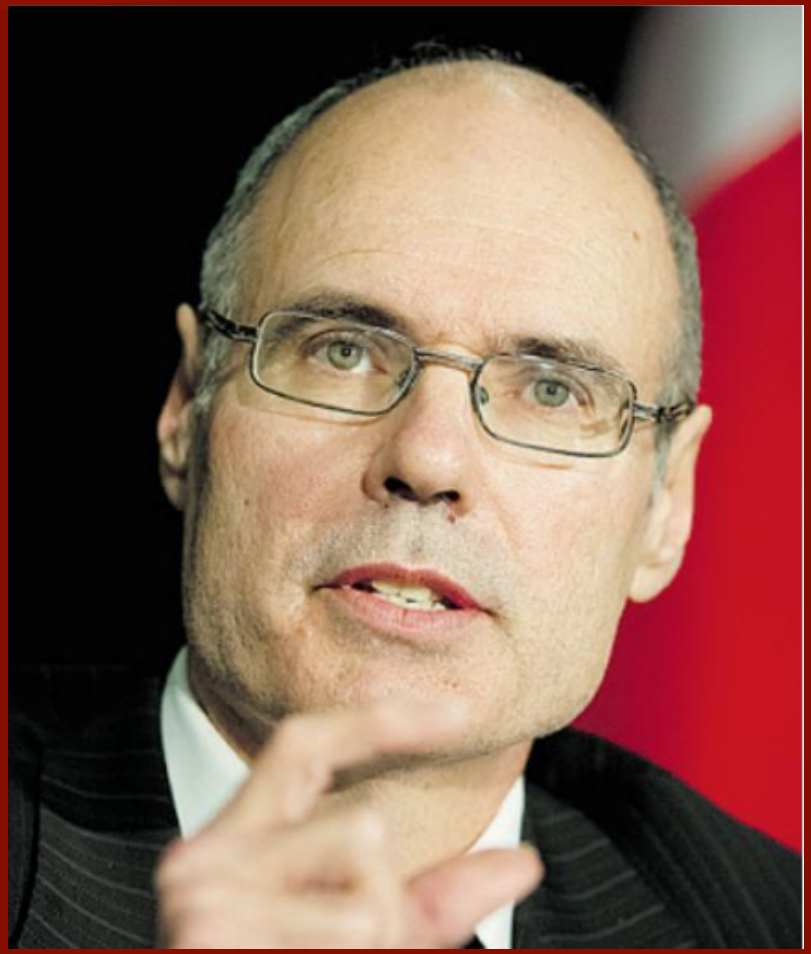
- Conventional studies ignore avoided environmental, social and legacy costs, fuel cost and energy security risks with renewables



Pembina Institute 2011

Economic Rationalism vs. Political Realism

- Technologically neutral level playing field bid system, even one based on economic (capital and operating) costs only, has been impossible to achieve.
- FITs, RPFs/Obligations pursued as politically feasible alternatives



Peter J. Thompson, Postmedia News , Ottawa Citizen

Argument 2: Renewable Energy as Industrial Strategy

- New renewable energy supply not the only goal of GEGEA
- Major rationale was potential for development of renewable energy industry
- Attempts to reproduce "Ecological Modernist" economic strategy from Germany, Denmark

The Green Economy

"We can seize boundless opportunities for our people. We can create millions of jobs, starting with a 21st Century Economic Recovery Plan that puts Americans to work building wind farms, solar panels, and fuel-efficient cars. We can spark the dynamism of our economy through long term investments in renewable energy that will give life to new businesses and industries, with good jobs that pay well and can't be outsourced. We will make public buildings more efficient, modernize our electric grid, reduce greenhouse gas emissions, and protect and preserve our natural resources"

Barrack Obama

December 15, 2008

The Market Fundamentalist Critique

- State much less efficient and effective than the market at picking winners and losers
  - Most that can be done is to get price signals right and markets will respond

FP COMMENT

TRENDING RBC | Earnings | Porter Airlines | Tax Season | BlackBerry

Ontario's Power Trip: Discounts and windmills

FP Tom Adams, Special to Financial Post | 12/06/27 | Last Updated: 12/06/27 8:55 PM ET

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Ontario Premier Dalton McGuinty works a solar panel assembly line during last year's election campaign. National Post

Like 15 Send Twitter Google+ LinkedIn Email Comments More

Granting discounts to industry while spending on wind means chaos

A Progressive Political Economy/ Ecological Modernist View

- Advanced industrial economies need to pursue active industrial strategies to retain and build high value added economic activities
- Presence of active industrial strategies in northern European economies that have retained significant manufacturing activities and role of 'green' technologies (Germany, Denmark, Sweden, Finland) in that process.

David Suzuki and Premier Dalton McGuinty take a stroll in Vancouver's Stanley Park on Wednesday. Suzuki is urging Ontarians to re-elect McGuinty this fall to save the Liberals' "groundbreaking" green energy policies.

CHRISTINE MCAVOY/FOR THE TORONTO STAR

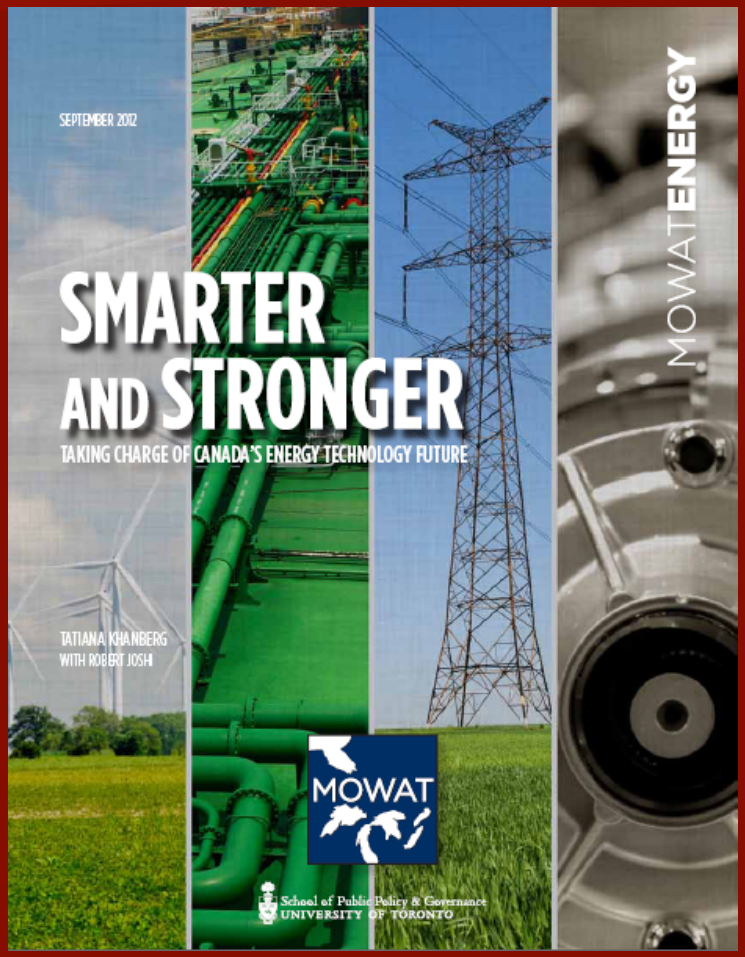
Renewable Energy as Industrial Strategy

- Lessons from comparative literature
  - Key source of sustained, high value added employment in renewable energy sector is export markets

www.gcaptain.com

Mowat Centre 2012

- “The Ontario government touts its intention to be come a leader in exporting clean energy technologies…
- However its current policy framework is not designed to support this aim.”



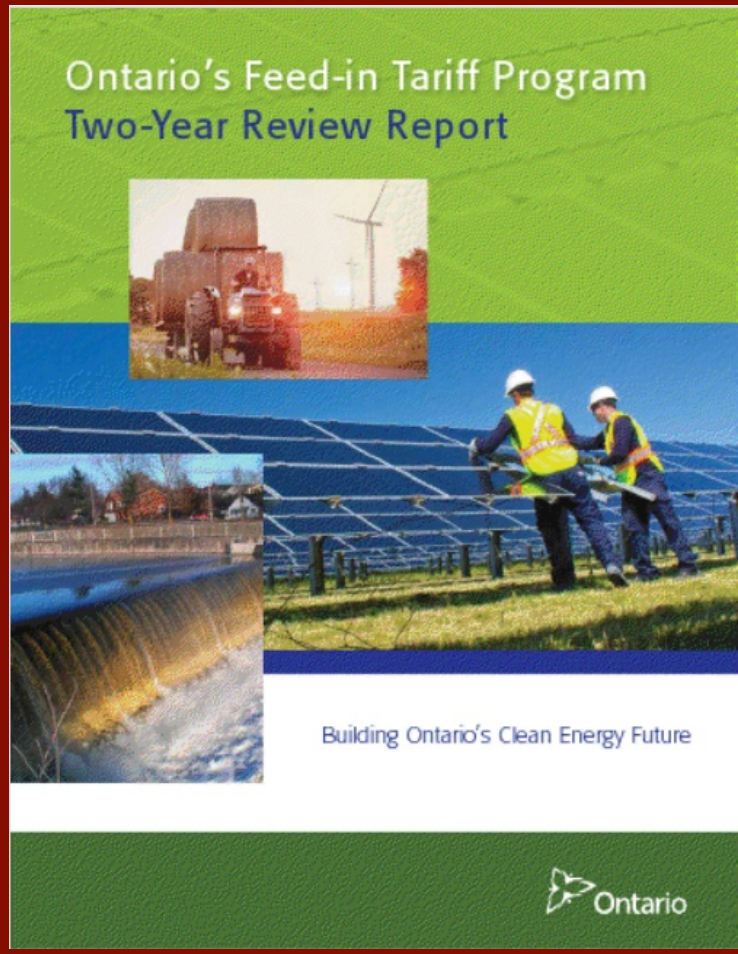
GEGEA as Industrial Strategy

- *Ad hoc* measures beyond FIT
  - Samsung Deal
  - Domestic Content Requirements

MARK BLINCH / REUTERS

FIT Review - "Clean Energy Economic Development Strategy" (recommendation 6.1)

- "Provide targeted financial support through the Smart Grid Fund to Ontario-based demonstration and capacity-building projects that test, develop and bring to market the next generation of technology solutions.
- Work with key stakeholders to consider the potential for a clean energy institute to spur domestic innovation and achieve greater global market presence for Ontario-based companies.
- Support domestic manufacturers by showcasing Ontario's smart energy solutions through a strategic export strategy.
- Create a Clean Energy Task Force to advise the Ministers of Energy and Economic Development and Innovation on potential strategies for Ontario's clean energy sector."



Conclusions

- Actual data on the state of the renewable energy industry in Ontario is very limited
  - Evidence around economic impact (positive and negative) grounded in economic modeling not empirical information.
  - Different modeling exercises have reached very different conclusions

Conclusions

- The debate about the economic impact of renewable energy initiatives is grounded in wider ideological debates about the role of governments and markets in relation to the environment, society and the economy
- Economic development impact debate in part an argument around role of industrial strategy in general

Conclusions

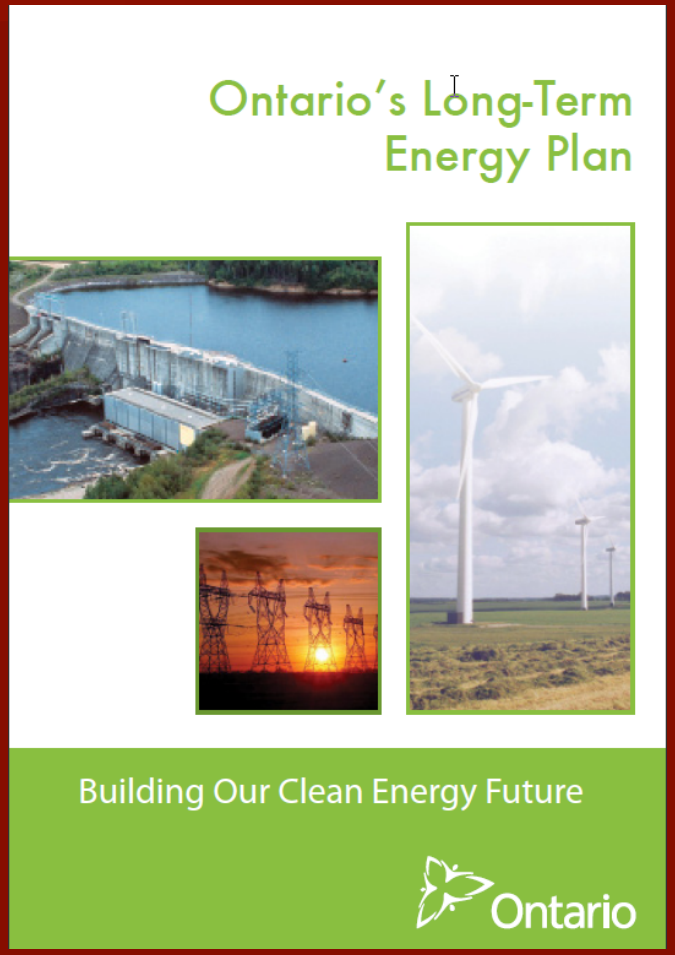
- Specific arguments over economic impact renewable energy initiatives depend in large measure about treatment of externalities and risks
  - Inclusion, scope, and valuation

Conclusions

- Questions for Ontario
  - Was this a viable strategy in the first place?
    - Was export potential there given dominance of Europeans and entry of the Chinese into renewables market?
  - Are we too late?
    - Was the FIT review moratorium fatal?

Conclusions

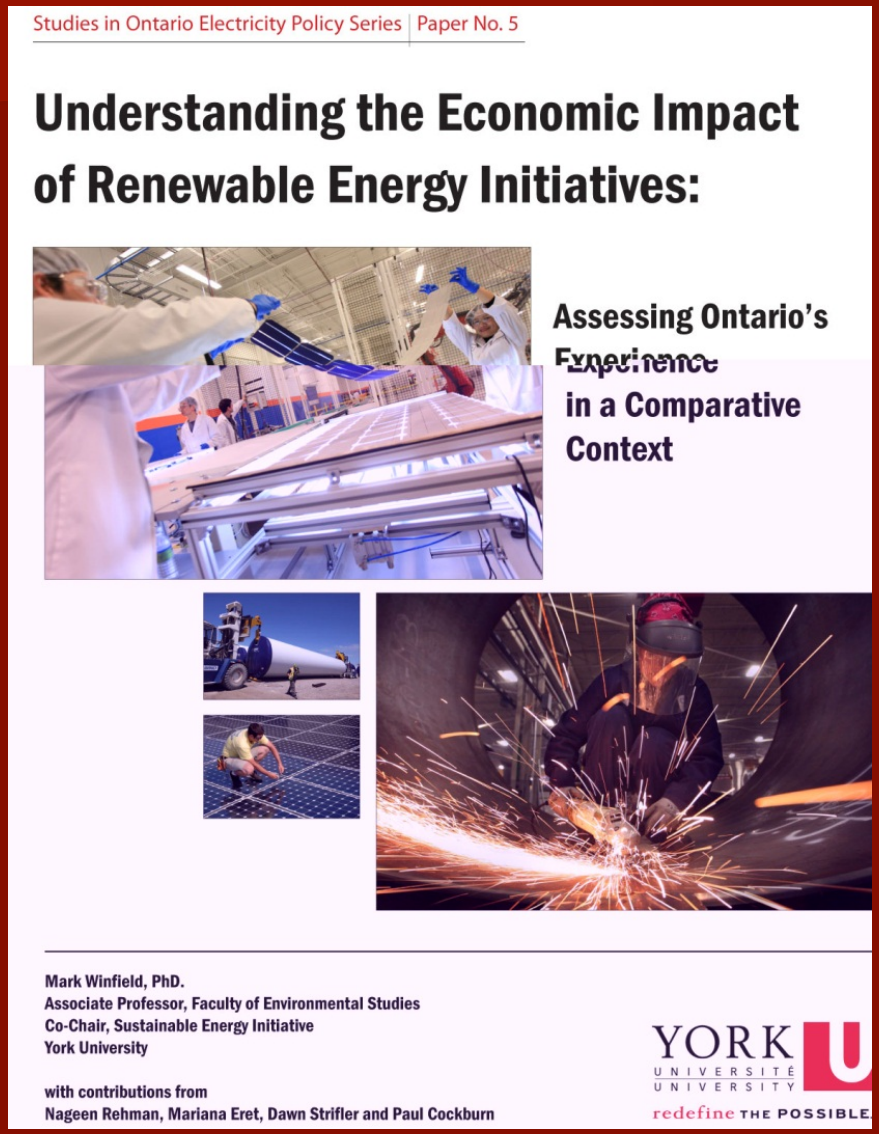
- Future role of renewables relative to other technologies
  - Uncertainty of domestic market beyond 2018
  - Nuclear refurbishments
  - Role of Quebec Hydro imports



Recommendations

- Clarify commitment to renewables beyond 2018.
- Develop a comprehensive, empirically-based profile of sector in Ontario.
- Identify of areas of potential comparative advantage in renewable energy technology and services for Ontario.
- Assess potential external markets for the Ontario industry in Canada, the United States and overseas.
- Assess and address education and skills development requirements within the sector.
- Market development and research and development support as outlined in the Deputy Minister's 2012 FIT review report.
- Develop and implement energy storage and smart grid strategies to support the integration of renewable energy resources into the province's energy systems up to their full potential.

http://sei.info.yorku.ca/



Economic Costs

Technology	Costs (cents/kwh)
Conservation	2.3-4.6
Natural Gas	3.9-16.4
Coal	3.8-5.5
Nuclear (refurbished)	8 (?-Bruce)-30+
Nuclear (New)	7.9 (OPA) – 15 (Moodys)-20+(Ontario RFP)
Wind	4-11.5 (FIT)
Hydro	~3 (Quebec)-13.1 (FIT)
Solar	15-44.5-54.9 (FIT)

Sources: OPA, OCAA, Auditor General of Ontario, Pembina Institute, Rivers et.al., Bernard, http://peswiki.com/index.php/Directory:Cents_Per_Kilowatt-Hour and others

3.5 Hydro-Quebec Export Prices of Interruptible Electricity, 2006 to 2012

(¢/kWh)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2006	9.99	9.14	7.09	6.01	7.36	6.54	7.12	10.36	6.31	6.66	6.01	7.61
2007	6.61	9.88	7.82	7.13	6.90	8.57	8.01	8.67	6.90	5.37	6.48	8.75
2008	8.69	6.68	6.67	6.05	6.74	8.00	14.04	11.26	7.59	9.62	7.46	6.58
2009	11.95	8.59	5.98	10.40	4.48	4.46	4.88	4.33	3.41	4.21	4.71	5.01
2010	5.16	4.70	4.06	4.09	4.29	5.27	5.90	5.94	6.64	11.83	6.83	6.02
2011	5.08	4.48	3.84	3.69	3.69	3.76	4.50	4.43	3.52	4.15	3.85	3.52
2012	4.29	3.51	3.00	2.85	3.13	3.10	3.62	3.54	2.71	3.28	3.77	-

Source : National Energy Board

Figure 6: Ontario Electricity Consumption 1975-2013 (Forecast 2013-2018) tWh/yr[103]